

INTERACTIVE

SYSTEMS CORPORATION

INTERACTIVE SYSTEMS CORPORATION

MEMO TO EDITORS AND REPORTERS
ATTENDING THE NCC OFFICE AUTOMATION CONVENTION
AT THE GEORGIA WORLD CONGRESS CENTER
ATLANTA, GEORGIA

INTERACTIVE SYSTEMS CORPORATION

will be introducing a major new product at the OAC
in the field of automated office communications

A press briefing and demonstration
of INTERACTIVE's integrated office automation system
will be held at the INTERACTIVE Booth #1913

TUESDAY, MARCH 4 at 9:00 AM
(An hour before the show normally opens)

Since an escort is required to get onto the exhibition floor
we will be meeting in front of the press room
at 8:45 AM

Please join us for coffee and sweet rolls

INTERACTIVE SYSTEMS CORPORATION

HOSPITALITY SUITE

Editors and reporters attending the OAC are invited
to join us for hors d'oeuvres and drinks
at our hospitality suite.

5:30 - 7:00 p.m.

Monday and Tuesday

ROOM 6707

PEACHTREE PLAZA HOTEL
210 Peachtree Street
Atlanta

LOCAL PRESS CONTACT FOR INTERACTIVE SYSTEMS CORPORATION

Esther Ackerman

Booth 1913 - 223-8618

or

659-1400 ext. 1513

News Release

For Release: Immediately

Contact: Esther Ackerman

INTERACTIVE SYSTEMS CORPORATION ANNOUNCES
THE CORPORATE COMMUNICATIONS SYSTEM

ATLANTA, March 4 -- INTERACTIVE Systems Corporation's integrated Corporate Communications System, which includes sophisticated file handling, text editing and electronic mail facilities, "can now link offices, one to another, in networks spanning the globe," Dr. Peter Weiner, President and founder of INTERACTIVE, announced today.

This type of host-to-host networking capability marks the beginning of a new era in the evolution of business communications," according to Dr. Weiner, "an era in which localized office support systems will give way to full corporate communications systems."

The newly announced INTERACTIVE Corporate Communications System uses DEC PDP 11's* and existing data communication facilities to create an integrated, full-function network of office installations

* DEC and PDP are Registered Trademarks of Digital Equipment Corporation.

(more)

that allows today's large corporation to function as an effective and cohesive unit.

In addition, with this system, corporations will be able to reach even beyond their own organizations, communicating with any company linked to the TELEX/TWX network.

The INTERACTIVE Corporate Communications System will be released in two stages. INtwx, which connects the INTERACTIVE screen editor (INed) and electronic message system (INmail) to the TELEX/TWX network is available immediately.

With INtwx, a user can create an electronic message using a full-capability two-dimensional text editor and route it to any addressee on the TELEX/TWX network, while simultaneously sending electronic information copies to one or more local users or other data network sites.

Incoming TELEX/TWX messages are handled as normal electronic mail; the user can answer, forward, electronically file and retrieve, move, delete or print them.

The second phase of release, which will be available this Fall, will provide full host-to-host networking capabilities through an interface to the Telenet network, using the X.25 international data transmission protocol. File transfer capabilities will also be available.

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INTERACTIVE's Corporate Communications System is a powerful combination of software facilities that transport the paper-bound office of today into the electronic office of the future. Based on an unusually elegant and powerful operating system, Bell Laboratories' UNIX,* it features the flexibility, modularity and ease of use that allow for continual growth to keep pace with the fast moving state-of-the-art.

For further information about the company and its products, contact: INTERACTIVE Systems Corporation, 1212 Seventh Street, Santa Monica, CA. (213) 450-8363.

* UNIX is a Trademark of Bell Laboratories.

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News Release

For Release: Immediately

Contact: Esther Ackerman

NED IRONS JOINS INTERACTIVE SYSTEMS CORPORATION
AS DIRECTOR OF RESEARCH

SANTA MONICA, CA. February 29 -- Ned Irons, the inventor of the first syntax directed compiler and the author of one of the first multi-programmed operating systems, has joined INTERACTIVE Systems Corporation as Director of Research.

For the ten years prior to joining INTERACTIVE, Mr. Irons was one of the founders of and a Professor at the Yale University Department of Computer Science. He served as Acting Chairman of the Department during 1977-78. Prior to that, he was a member of the technical staff at the Communications Research Division of the Institute for Defense Analyses.

Before accepting the position of Director of Research, Mr. Irons participated in new product research on a consulting basis. INTERACTIVE's highly successful INtext terminal and IS/1 Workbench for the VAX are products that were initiated by Mr. Irons. The company

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plans to announce in the near future several other new products that are derived from his work.

Mr. Irons said that he is looking forward to having "an impact on the commercial world in which computers are used. I believe INTERACTIVE will be a big presence in the computer business," he continued, "and I am excited to be part of a company that is transforming complex technology into something that non-technical people can quickly learn, use, and easily remember."

A BSE graduate of Princeton University, 1958, with an MS degree from the California Institute of Technology, 1959, Mr. Irons is a current member of the President's Committee on Computers in Education, Brown University; the Scientific Advisory Committee, Institute for Defense Analyses; and the National Research Council Committee on the Conduct of Research in Computer Science. He is also a member of the Association for Computing Machinery and the Institute of Electrical and Electronics Engineers.

His principal publications include "A Syntax Directed Compiler for ALGOL-60" (1960), "Experience with an Extensible Language" (1968) and "A CRT Editor" (1972), all of which appeared in issues of the Communications of the Association for Computing Machinery (CACM).

INTERACTIVE Systems Corporation, a Santa Monica, California based company, offers facilities for integrated office automation, including a CRT text editor, electronic mail, word processing, hierarchical

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filing, integrated data processing, program development tools and intra-office/inter-company communications networking among their product line. INTERACTIVE's operating system, IS/1, which can be based on PDP 11 or VAX minicomputers,* is an enhanced version of the UNIX** operating system.

For further information about the company and its products, contact: INTERACTIVE Systems Corporation, 1212 Seventh Street, Santa Monica, CA. (213) 450-8363.

* PDP and VAX are Registered Trademarks of Digital Equipment Corporation.

** UNIX is a trademark of Bell Laboratories.

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PRESS BACKGROUNDER

INTERACTIVE SYSTEMS CORPORATION

MARCH 4, 1980

EDITORS/REPORTERS PLEASE NOTE: INTERACTIVE Systems Corporation executives are available to participate in round-up articles, seminars and other activities related to the office automation marketplace.

INTERACTIVE SYSTEMS CORPORATION

By combining sensitivity to human engineering requirements with the most advanced software and communication technologies, INTERACTIVE Systems Corporation has established itself as a leading innovator in the office automation marketplace.

INTERACTIVE was formed in June, 1977, when it provided the IS/1 and IS/1 Workbench operating systems, the first enhanced and fully supported commercial versions of the UNIX* operating system, for use on DEC's PDP-11 computers.** Later, INTERACTIVE provided UNIX and Workbench facilities as a subsystem of DEC's VAX/VMS operating system for the new VAX series of minicomputers.

(UNIX, which was developed by Bell Laboratories in the early 70's, is an unusually elegant time-sharing system featuring a simple command language, device-independent input/output, a hierarchical file system, powerful software development tools, and a mechanism for connecting programs together to perform complex tasks. UNIX is used throughout the Bell System and in several hundred industrial, government and university installations.)

* UNIX is a Trademark of Bell Laboratories.

** DEC, PDP and VAX are Registered Trademarks of Digital Equipment Corporation.

The IS/1 Workbench, with its flexibility and modularity, became the basis of INTERACTIVE's Corporate Communications System. It is a system that can continue to evolve at the fast pace being set by today's computer and communications technologies.

The primary thrust of INTERACTIVE's growth in the office automation field will be in communications. INTERACTIVE is now a leader in providing integrated systems that can link offices across a city or across the world.

CONSISTENT GROWTH

INTERACTIVE Systems Corporation, which has offices in Santa Monica, CA and Washington, D.C., is a privately held corporation with current revenues at a rate of \$9 million per year. INTERACTIVE has doubled in size each year since its inception, and expects to continue growing at this rate over the next five years.

INTERACTIVE'S PEOPLE

Dr. Peter Weiner, INTERACTIVE's President, was founder and Chairman of the Computer Science Department at Yale University, and later, Head of the Information Sciences Department at The Rand Corporation. Dr. Weiner has specialized in areas of computer science that push the technological state of the art, yet have wide practical application.

He has guided advanced research in areas of intelligent terminals, personal computing, computer applications to command and control, and sophisticated graphic computing.

Dr. Weiner is dedicated to seeing the most advanced computer technology applied in the office automation field, and is proud that INTERACTIVE's own offices use the latest corporate communication system technology.

INTERACTIVE's Executive Vice President, Dr. Robert Anderson, a Harvard Ph.D, has done extensive research in areas such as applied artificial intelligence and computer graphics at both The Rand Corporation and the University of Southern California's Information Sciences Institute. In his research, he has developed a system for programming computers by sets of English-like rules, and an interactive map display system that allows the user to work with variable-scale map displays for geographic problem-solving.

Dr. Anderson served as Head of the Information Sciences Department at Rand for two years, and is a strong advocate of "the UNIX philosophy" of modular and flexible systems design.

Ned Irons, Director of Research, is the inventor of the first syntax-directed compiler and the author of one of the first multi-programmed operating systems. For ten years prior to his joining INTERACTIVE, Mr. Irons was a Professor at the Yale University

Department of Computer Science, serving as Acting Chairman of the Department from 1977-78. Mr. Irons is most interested in "getting ideas into the marketplace where they will actually be used to help people." He has his MS degree from the California Institute of Technology.

Martin Lanes, Vice President and Chief Financial Officer, was Vice President and Controller of Xerox Business Systems before joining INTERACTIVE. He has also held the position of Vice President and Controller for Xerox Data Systems and the Xerox Education Group, and has been Director of Corporate Financial Planning for the Xerox Corporation. Mr. Lanes received his M.B.A. in Accounting from the University of Rochester.

Dr. Heinz Lycklama, Vice President for Technical Development and a Ph.D from McMaster University, joined INTERACTIVE after a long career at Bell Laboratories, where he worked on UNIX-related projects. While at Bell Labs, Dr. Lycklama wrote LSX, a single user version of UNIX running on the LSI 11/03 microprocessor, and MERT, a multi-environment, real time operating system with UNIX built on top of it. He also managed a project in advanced communications systems.

Dr. Lycklama finds it satisfying to work in a field in which development projects can be conceived, designed, implemented and made available to users in a short time. He was responsible for transport-

ing the IS/1 Workbench to the VAX, a project completed in less than a year.

Dr. Steven Zucker, Vice President for Technical Operations, worked in a variety of research and development environments before joining INTERACTIVE as a founding member. At the Fairchild Semiconductor Research and Development Laboratory, he developed a graphical system for laying out integrated circuits. While at The Rand Corporation, he worked on interprocess communications and computer security. In addition, he developed a realtime data acquisition system for use in oil explorations.

Dr. Zucker, who earned his Ph.D from Stanford, particularly enjoys his customer support role, and likes "to see things that work today and can be better tomorrow."

Research and development in advanced computer communication systems is being performed under the leadership of Dr. Brian Lucas. Prior to joining INTERACTIVE, Dr. Lucas was the manager of system software for a research computer complex within the Systems and Software Division, Institute for Computer Science and Technology, National Bureau of Standards. While at NBS, he designed and implemented numerous extensions and performance improvements for the UNIX operating system, and designed protocols and implemented network software to support interprocessor communication.

At INTERACTIVE, Dr. Lucas' work on computer communications systems includes both the implementation of established hardware interfaces and software protocols such as X.25 and various RJE systems, and the design of new protocols to meet the needs of future distributed systems. Particular areas of interest are file transfer protocols, distributed mail protocols and remote terminal systems.

INTERACTIVE's hardware development specialist, Dr. Charles Minter, worked with Dr. Alan Perlis on a computer designed for efficient use of APL while at working on his Ph.D at Yale. He has done extensive research on hardware design, particularly in the areas of display systems for integrated circuit design and multi-function terminals, and has taught at both Yale and the California Institute of Technology. Dr. Minter finds product development in such a rapidly changing field both stimulating and exciting.

INTERACTIVE's CORPORATE COMMUNICATIONS SYSTEM

INTERACTIVE, at its inception, began to finely hone for the commercial marketplace a variety of powerful UNIX-based office automation tools that had been evolving for many years at places like Yale University and The Rand Corporation.

Adding additional capabilities to these enhanced tools, INTERACTIVE created a powerful combination of software facilities that

transport the paper-bound office of today into the electronic corporate communications system of the future.

Based on the hierarchical filing and retrieval capabilities of the IS/1 Workbench System, INTERACTIVE's Corporate Communications System provides an easy-to-access electronic file drawer that makes information storage and retrieval fast and efficient. It also automatically keeps track revisions to lengthy documents.

INed, the INTERACTIVE CRT screen editor, takes the drudgery out of editing, speeding up document revision and increasing efficiency throughout the office. INed has the capability of displaying up to ten windows on the screen at one time.

When the powerful capabilities of INTERACTIVE's microprogrammed INtext terminal are used with INed, complicated functions such as "cut and paste" are reduced to a few simple key strokes, and the CPU is offloaded considerably.

INTERACTIVE's word processing facility, INword, allows maximum flexibility and ease in formatting so that the final document looks just right. Included among its features are automatic pagination, footnoting, headers and footers, hyphenation, and odd-even page margin differentiation capabilities.

And INmail, the INTERACTIVE electronic message system, provides

effective inter-office communication, facilitating fast response and increased efficiency. With INmail, messages can be created using the full screen editor and then sent, answered, forwarded, filed, retrieved, moved or deleted.

INtwx, which connects the INTERACTIVE screen editor and electronic message system to the TELEX/TWX network, links distant corporate offices in a network, facilitating improved corporate communications.

For more detailed information on the INTERACTIVE product line, please see the enclosed Fall 1979 Newsletter and news releases.

COMPLETE SYSTEMS -- HARDWARE, SOFTWARE, SUPPORT

INTERACTIVE Systems Corporation provides its customers not only with software systems, but DEC hardware and full support, training and maintenance services as well.

INTERACTIVE Systems Corporation

1212 Seventh Street
Santa Monica, CA 990401
(213) 450-8363

Suite 907
1015 15th Street, N.W.
Washington, DC 20005
(202) 789-1155

INTERACTIVE

SYSTEMS CORPORATION

Fall 1979

A Family of Products

INTERACTIVE offers complete systems for word processing, large software development projects, sophisticated document formatting and publications, as well as electronic mail and office automation. Computer communications facilities are also available to link machines and remote sites.

Software, hardware, maintenance, support, training and documentation for multiple applications can now be obtained from a single source and on a single system.

You can choose from a variety of software components for a system tailored to your needs. Our systems are based on the UNIX* Time Sharing Operating System and DEC's VAX/VMS† and PDP-11 series. The diagram in Figure 1 illustrates some of the hardware devices that your system might include.

Contents

IS/1

IS/1 Workbench

IS/1 Workbench for the VAX

Historical Notes

Hardware

INtext text editing machine

INed word processing text editor

INmail electronic mail facility

INword for word processing

INroff formatting package

INfort Fortran 77 compiler

INremote RJE facilities

X.25 network interface

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† VAX and VMS are Registered Trademarks of Digital Equipment Corporation.

Three Operating Environments

INTERACTIVE provides three basic operating environments and a set of building blocks with which to tailor them. The INTERACTIVE System/One (IS/1) and the IS/1 Workbench timesharing operating systems run on the DEC PDP-11/34 through 11/70 computers. The IS/1 Workbench for the VAX runs as a subsystem of DEC's VAX/VMS.

INTERACTIVE System/One

an improved, enhanced version of the UNIX Time Sharing Operating System

Simple Yet Powerful

IS/1 incorporates all of the advanced features of UNIX, the most significant of which is its elegant simplicity.

No single UNIX feature can account for the system's undisputed success. But the end result is clear: a system that is easy to learn and easy to use, a system that takes the drudgery out of program creation and development.

IS/1 allows a system to evolve gracefully to meet changes in functional requirements or technology. New devices can be easily integrated for future growth and expansion.

Features

- A flexible and powerful command language that allows the use of any program or executable file as a command. It even allows you to override system commands with your own version. Renaming of standard commands allows you to tailor the terminology to your environment.
- Command files that let you execute a sequence of commands as a single function.
- Conditional execution of commands: *if*, *then*, *else* and *while* constructions. These are particularly useful in command files.
- A file structure that is oriented to interactive use, including a tree structured directory system and privacy protection mechanisms.
- Centralized file storage and retrieval that accommodates large files, limited only by the amount of available storage on your system. A four hundred page book is easily handled. Documents can be stored online in a common directory, or in your private directory.

- Word processing facilities including *index*, for cross-reference indexes of English text; *typo*, to search for possible misspellings in a file; *sort*, to sort files and/or merge them; *diff* and *comm*, two ways of comparing files.
- Some basic text formatting tools for office applications and document preparation.
- A reminder facility that delivers reminders or begins execution of programs at a specified time.
- Real time inter-terminal communication.
- The ability to run commands in "background" mode.
- Parallel execution of commands (pipelining) with the output of one command connected to the input of another.
- An interprocess communication mechanism that allows building block modules to be easily combined.
- Automatic I/O redirection that provides the complete interchangeability of I/O streams resulting in device independent programs. This means, for example, that you can direct your output to any one of several different types of printing devices or to your terminal screen for review.

In addition, IS/1 includes the following major support programs:

- sh** — The Shell, or Command Language Interpreter
- cc** — C, a Block-Structured Programming Language
- ed** — Line-Oriented Text Editor
- cdb** — C Debugger
- as** — Assembler
- ld** — Linking Loader
- yacc** — Yet Another Compiler-Compiler

continued on page 2

IS/1 — continued

INTERACTIVE Enhancements to UNIX

INTERACTIVE has reduced the size of the UNIX kernel permitting larger user programs. IS/1 also supports swapping and reentrant code to reduce total memory requirements. IS/1 supports most standard DEC peripherals, including RK06, RK07, RM03, RX11, and most new products will be supported as they become available. We have significantly better system management facilities for disk checking, dumping and restoring files, and easy addition of user accounts to the system. It can handle bad blocks on disks. IS/1 provides a tailorable accounting system. Improved terminal handling provides flow control.

Whether for program development, general timesharing, or word processing, IS/1 capabilities are heightened by INed, the INTERACTIVE editor, and by the electronic message system, INmail. The basic word processing and text formatting capabilities included with IS/1 can be significantly amplified by the INword and INroff packages.

Hardware for the Operating Environments

IS/1 and the IS/1 Workbench run on all DEC PDP-11 computers with memory management: PDP-11/34, 11/40, 11/45, 11/55, 11/60, 11/70.

IS/1 Workbench for the VAX can be installed on any DEC VAX running the VAX/VMS system.

INTERACTIVE supports a wide variety of peripheral devices, including standard DEC peripherals—in particular, the new RK07 and RM03 disks. We also support phototypesetters and correspondence-quality hardcopy terminals for publications and word processing. Examples are:

- typewriter-like terminals
 - Diablo Hyterm
 - Qume Sprint 5
 - some IBM typewriters
- phototypesetters
 - Wang C/A/T/4, C/A/T/8
 - Mergenthaler Linotron 202
 - Others, per special request
- high-speed printers
 - IBM OS/6 ink jet printer
 - IBM 6670 laser printer
 - Xerox 9700 laser printer

IS/1 Workbench

The INTERACTIVE System/One Workbench has all the features of IS/1 augmented by two specialized subsystems for the control and manipulation of documents and software programs: the Source Code Control System (SCCS) and Make.

SCCS

Control System for Document and Source Code Modifications

SCCS adds control to the maintenance of text files. Whether your text files are documents, legal contracts, briefs, technical manuals, non-technical manuals or source code in any language, SCCS will add control by maintaining an audit trail of revisions.

A text file is turned over to SCCS by executing the *admin* command. From that time forward the system tracks changes made.

In order to revise a document you will request it from the system, letting SCCS know your intention is to make modifications. Only one person can issue such a request for a particular version of a particular document at any one time. Others will automat-

ically be locked out. This prevents the problem of overwriting that exists in any environment where two or more are pooling their efforts in updating a text file.

After the changes are made, you return control to the system. SCCS will record who, what, when, and why the changes were made, and issues the text file a new version number.

Using SCCS, you have the ability to request past versions. SCCS, knowing all the changes that have been made to the text, can recreate any past version. With the execution of a single command you can print the differences between two specified versions of any file under SCCS control.

In addition, you can request information regarding the modifications that have been made. SCCS will tell you what they were, who made them, when they were made, and why.

If the maintenance of text is a major burden for your organization, SCCS will be a very useful tool for you. Used in conjunction with INTERACTIVE's word processing, document processing and typesetting

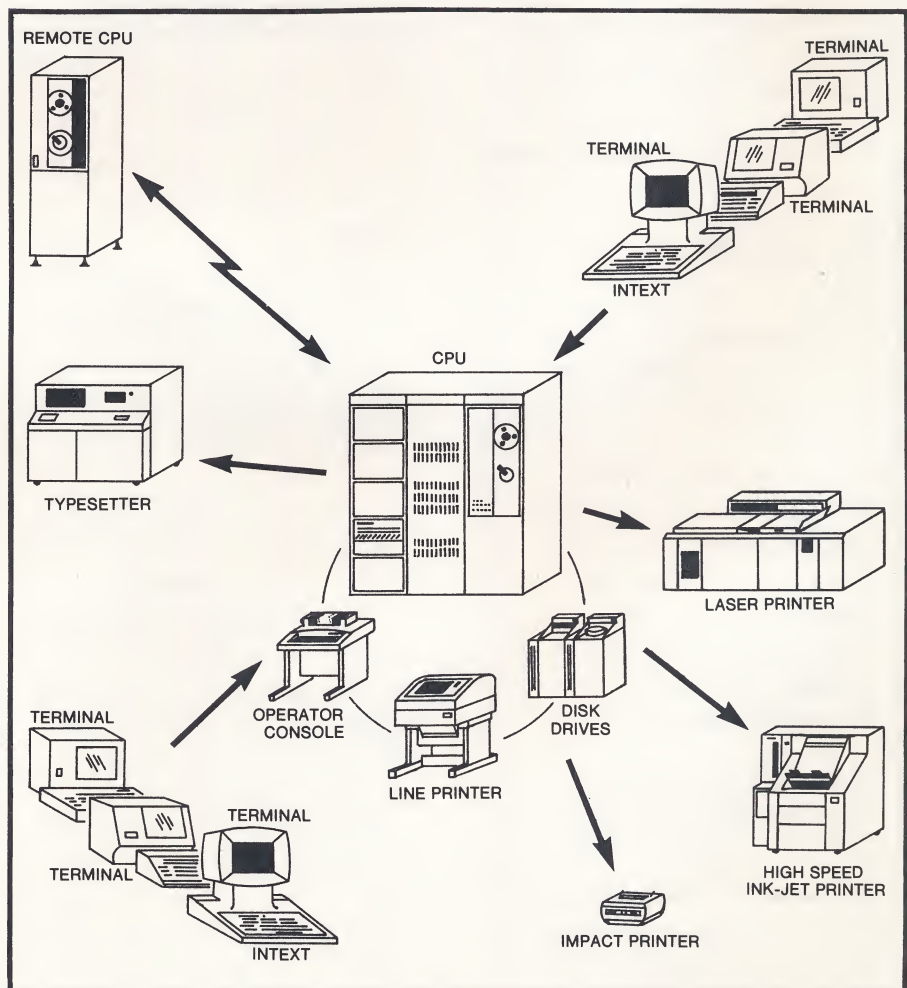


Figure 1. A possible hardware configuration

IS/1 Workbench — continued

facilities, SCCS adds control to document preparation and processing. Used in conjunction with the remote job entry system, INremote, SCCS adds uniform control to system development regardless of languages or target computers used. The Workbench allows you to develop software for processors (mini and micro included) that may have primitive operating systems. Using the Workbench, a system can be developed and down-loaded to another processor. Thus, regardless of the target environment for your software, the Workbench provides you with state of the art tools for developing and tracking software systems.

Make

It is very easy for a programmer to forget which files depend on which others, which have been modified recently, and the exact sequence of operations needed to make or exercise a new version of the program. After a long editing session, one may easily lose track of which files have been changed and which object modules are still valid. Since a change to a global declaration can obsolete a dozen other files, forgetting to compile a routine that has been changed or that uses changed declarations will result in a program that will not work and a bug that can be very hard to track down. On the other hand, recompiling everything in sight just to be safe is very wasteful.

The Make system automates the generation of complex systems of files or programs. It keeps track of which modules depend on other modules and guarantees that all are kept up to date by use of a graph of such dependencies.

Historical Notes

UNIX was developed in the early 1970's at Bell Laboratories. It is used extensively within the Bell System and at commercial, government, and university facilities. At first UNIX was only released to universities for educational purposes. Later it was provided to those commercial institutions that could afford to support the system internally.

Today, INTERACTIVE provides IS/1, its improved and enhanced UNIX system, as a fully supported product, to all computer users — novice and expert alike.

IS/1 Workbench for the VAX

The IS/1 Workbench for the VAX integrates key tools of the IS/1 Workbench into the VMS operating system environment.

Written in native mode, it provides a convenient working environment and a uniform set of tools for computer program development, documentation preparation and text processing.

The Integration of Workbench and VMS

Because the Workbench runs as a subsystem of DEC's VAX/VMS operating system, access to the DEC software is also available at all times. In particular, the Workbench tools may be used to develop native mode VAX/VMS programs. This also means that our product takes full advantage of the VMS paging facilities.

Program Development Tools

The IS/1 Workbench provides a rich set of program development tools for producing software on the VAX computer. In addition to the C compiler, a variety of other programming languages such as Fortran,

Bliss, COBOL, and assembly language are available.

The command interpreter is capable of invoking native DEC utilities with the same command language. Most Workbench programs can be initiated directly by using the VMS DCL command interpreter as well as by using the Workbench command interpreter.

The file system is fully compatible with files generated by VMS programs; files created using the Workbench system are readable under VMS and vice versa. File system features include a hierarchical structure, simple and consistent naming conventions, and a complete set of directory and file protection modes.

IS/1 Workbench for the VAX includes the following IS/1 features:

- command files
- standard I/O redirection
- pipelining
- "background" processing of commands
- conditional execution of commands

The INtext Terminal

INtext, the INTERACTIVE text editing machine, is a video display terminal designed for use with INed. This intelligent terminal does much of the edit processing locally and increases the number of stations a system can support simultaneously.

INtext has an exceptionally clear display of 24 80-character lines of text or graphic symbols. The screen, 12 inches along the diagonal, is hooded to avoid glare and eyestrain. INtext is supported by Perkin-Elmer's worldwide service organization.

INtext, reconfigured through microcode, supports state of the art editing functions that must be handled totally by the CPU for less advanced terminals. Many of the INed editing operations are performed locally in the INtext (e.g., opening lines, moving the cursor, displaying the blinking line to define areas of text, displaying the tab grid at the top of the window), resulting in:

- faster response to the user through local echoing of most editing operations

- fewer characters transmitted between CPU and terminal
- transmission of terminal keystrokes in blocks, to further reduce CPU swapping

The net effect is to improve both perceived response, through local echoing of editing operations, and actual response, by offloading most of the burden of echoing from the CPU to the terminal.

INTERACTIVE has custom-designed the INtext terminal for use with INed. A diagram of the INtext keyboard showing the special function keys is shown on page 4. A table showing how these buttons are used with INed appears on page 9. INed may also be used with other video terminals that are cursor addressable.

INed works well with such terminals as the: Ann Arbor 4080, ADDS 980, Beehive B500, Concept, DEC VT52, HP 2641, LSI ADM3, and the Teleray 3800. These terminals, however, do make larger demands on the central processor. This means that your system will be able to support fewer terminals.

INed — continued

By merely pressing keys (no long wordy phrases) you can:

- insert characters
- delete characters
- open (insert) lines
- close (delete) lines
- define and open a block of text
- define and close a block of text
- define and move a block of text
- search and replace
- scroll horizontally
- scroll vertically
- go to any line by number
- execute a computer program
- save the current edit file
- exit the editing session (automatically saving modified files)
- abort the editing session
- restore copy removed in error
- create additional viewing windows to any files

Backspacing

INed permits backspacing through the use of the backspace key. To make corrections you simply overstrike and the change is immediately visible.

Simple Cut and Paste

Cut and paste is automated by allowing arbitrary sections of text to be picked up and inserted anywhere in the same file or even in another file or files. This feature provides a means of storing and retrieving repetitive phrases.

Global Search and Replace

The search function automatically scrolls to the next instance in the file of a specified string of characters. Scrolling will be performed either forward or backward, left or right, according to where the phrase is found. In addition, you have the ability to replace all occurrences of a particular string within a file with another text string.

Automatic Scrolling on Input

After entering the last line of text in the window, INed automatically scrolls up allowing more text to be entered, while leaving enough of the previous text for you to maintain the context of your entries.

Recovering Text Deleted In Error

Using the restore function key, you can replace text which was deleted in error. All deleted text is stored for the length of the edit session in a special file which is accessible to you for cut and paste purposes. This enables you to recover any text mistakenly deleted.

File Backup

INed provides several levels of backup that prevent the inadvertent destruction of text files. For example, in the event of a hardware malfunction, the entire editing session can be reproduced, often without loss of a single keystroke. All lines deleted during an editing session are saved for potential recall until the end of that session. In addition, an original copy of every file edited is automatically saved under a backup file name.

AUXILIARY PROGRAMS ENHANCE POWER OF EDITOR

Many system utilities can be executed directly from INed. They can be invoked to process a line, a paragraph, or the entire file. The results replace the processed text in the file and on your CRT so that you can immediately view the calculation or transformation.

Text Formatting

Facilities are available for formatting a part or all of the text being edited during the edit session. At any time, you can:

- paragraph fill (as in letter writing)
- perform left and/or right paragraph justification (as in formal publications: books, etc.)
- redefine line length (useful for secondary paragraphs)
- hyphenate according to a logic program supplemented by a small exception file.
- replace text

Selecting and Sorting

A section of the text can be selected and sorted alphanumerically or numerically in either forward or reverse order. This utility will sort using the entire line as the sort field if none is specified. If desired, one or more sort keys may be entered. Alphanumeric and numeric keys may both be used in the same sort.

Proofreading

INTERACTIVE provides a dictionary for finding spelling errors and unusual words. This dictionary may be supplemented with your own dictionary of frequently used words or terms.

User Defined Capabilities

Editing utilities may be written to satisfy special needs. These programs are written in the same fashion as one would write any processing routine in IS/1, and also may be executed within INed. For example, you may write a utility that adds tables of numbers. This utility would then be usable while editing to display the result within the file itself.

Maintaining Audit Trails of Changes to Documents

In either IS/1 Workbench operating environment, SCCS can be used to track changes made to files (documents), who made them, and why. In addition, the user has the facility to recall the document as it appeared at any point in time since the tracking began.

Our key product is INTERACTIVE System/One; an improved, enhanced version of the widely used UNIX*

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* UNIX is a trademark of Bell Laboratories

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Time Sharing Operating System. We also offer a growing collection of new software and utilities to provide the basis for highly effective systems tailored to word processing, interactive timesharing, publishing, large-scale software development projects, computer networks and communications.

INTERACTIVE provides perpetual software licenses with a full year of software support which includes installation, training and software releases. In addition, we offer DEC computers from the PDP-11/03 micro to the PDP-11/70 mini to the VAX-11/780. Among some of the special peripheral equipment that we offer is the INtext, INTERACTIVE's Text Editing Machine, typewriter quality hardcopy terminals and phototypesetters. You have the benefit of dealing with a single source for your entire system.

ENTER: ffill -170

File letter Line 36

Figure 3. INed viewing/editing window

INmail Electronic Message System

INmail, the INTERACTIVE electronic mail facility, is used to create, send, answer, and file messages, letters, memoranda, reports, and documents. INmail is fully integrated with INTERACTIVE's other software packages. All messages created using INmail are accessible by any of our other packages, and conversely, text (or data) created by other means are accessible when using INmail.

An electronic mail system provides immediate turnaround regardless of the geographic distribution of the organization. You have a location on the central disk area known to the system as your mailbox. All other users have a private mailbox as well. Once you've written the message, it can then be distributed to one, or as many of the mailboxes as required. The message is then available for viewing or printing at any local office.

Easy to Use

INmail will prompt you for the name(s) of the users to whom the mail is being sent. It also prompts for the names of users to be copied and the subject of the message. The prompts are but a few characters, yet enough for the naive user as well as the expert. INmail automatically inserts a date and time stamp, and provides a standardized message header which it fills in from the prompts.

Sending Mail

You may specify that the mail be sent to:

- another user
- more than one user
- a mailing list, where the list is the name of a file containing the names of the recipients

You can then carbon copy (or blind carbon copy):

- another user
- more than one user
- a mailing list, where the list is the name of a file containing the names of the recipients

Writing the Message

INmail offers you a choice of methods for entering the body of the message:

- directly
- using a line-oriented text editor (used primarily with typewriter-like terminals, e.g., TI Silent 700)
- using INed (this method then gives the user all the facilities available in INed, our screen-oriented editor)

Receiving Mail

INmail informs you when there is a message for you in your mailbox. You may read the entire message or review only the header, which will tell you who sent it, when, and the subject. Based on this information, you can then decide whether or not to read it immediately. The message will remain in your mailbox until you file it or delete it. INmail automatically tags messages as read and informs you of those that have not yet been looked at.

While perusing your mail, you have the following options:

- read or skip a message (e.g., read only those messages from a certain party or on a particular topic)
- reread a message
- respond to a message
- discard a message
- save a message in the appropriate file
- list the one-line headers for each message
- list the one-line headers for messages from a specific user or on a particular topic
- forward a message to another user
- quit and continue later
- execute any system command

Responding to Mail

When you decide to respond to a message, INmail will automatically fill in the header, listing the subject as a continuation of the subject of the message requiring the response. This

facilitates later tracking of all messages written on a particular topic. INmail will prompt for addressees, initially listing the original distribution list. The same editing facilities are available for answering mail as for sending mail. If you are using INed, you can access the original message while you are composing your reply.

Reviewing Past Correspondence

After you read a message you may move it or copy it to one of your correspondence files. INmail allows you to read this correspondence file at a later date with the same commands that are used to read your mail while it is still in your mailbox.

Data Security

You have your own mailbox, inaccessible to other users. The IS/1 operating environments allow you to set protection modes on a file-by-file basis, so that some mail may be stored in a file accessible to other designated users, while other mail can remain private.

Execution of Other System Programs

While sending mail, you may execute other system commands. For instance, if you have momentarily forgotten the name of the file to which you want to append a message, you may peruse the directory. Or, if the response requires some calculation, the system desk calculator can be used to perform it.

Getting a Message Printed

If you want a printed copy of any of your messages you simply issue a print command.

INword For Word Processing

The INTERACTIVE word processing system is specially designed for use in the office environment. Used in conjunction with INed, this system offers powerful word processing capabilities.

INword is designed for use on a shared logic system provided by one of the INTERACTIVE operating environments.

Centralized File System

All files and documents are kept in a central file storage facility, thereby eliminating the document redundancy that would be necessary with stand-alone stations. The same standard

paragraphs can be used at many stations simultaneously. In making changes to the standard document paragraphs only one central copy needs to be altered. This feature not only reduces the amount of storage required for documents but also assists in maintaining document integrity.

Document and File Security

There are facilities for access control to documents and files. Users or supervisors can set specific protections providing or limiting access to others.

continued on page 7

INword — continued

Formatting

INword users input in a “what you see is what you get” manner. The system understands that if the typist inputs block paragraphs, indented paragraphs or hanging indented paragraphs this is what is wanted on output. Even charts can be input exactly as the typist wishes them to appear on output. The system, on output, automatically refers to your company’s personalized default file to provide headers, footers, paper size, page numbering and margins according to company standards.

A minimum number of simple commands, embedded within the text, can be used to override default formatting or extend it. For example, to center, the typist merely inputs a .c (center) before the text to be centered and a .ce (center end) after it. The system will do the centering on output. To create footnotes, the typist places a .fs (footnote starting) followed by an asterisk [*] for starred footnotes or parentheses [()] for automatically numbered footnotes before the footnote text and a .fe (footnote end) at the end of the footnote text. On output, the system will type the footnote rule and the footnote on the bottom of the page where it is referenced.

English-like commands are used outside of the document. For example, to type a document on a letter-quality printer, the command is *type filename*. If you only want page 3 output, you would use *type -o3 filename*.

Initial Input

Input to INword may come from:

- video terminal
- typewriter-like terminal
- magnetic tape
- communications link with another central processor. Documents currently present on an IBM 370 or other large mainframe can be transferred to INword using INremote.

Text Processing Features

- justification of either or both margins
- automatic hyphenation using a sophisticated logic program and a word hyphenation dictionary
- suppression of automatic hyphenation
- footnotes which can carry over to the next page if excessively long
- automatic page numbering at top or bottom of page

continued on page 8

Input to INword:

.nf
October 18, 1979

Mr. Ronald P. Jackson
International Publishing, Ltd.
Oakbridge Road South
New Southgate, London N11 1HB

Dear Mr. Jackson:

.f
I am enclosing two copies of the IS/1 Text Processing Manual as you requested. Of particular interest to the beginner is the section on INed, the INTERACTIVE text editor. You will also find several articles on the various INroff programs you have expressed an interest in, including those for use with a phototypesetter.

Please let me know if you have questions on any of the information in this manual. I look forward to hearing from you.

.nf
Sincerely,

M. Gillogly
Publications Coordinator

Produces:

October 18, 1979

Mr. Ronald P. Jackson
International Publishing, Ltd.
Oakbridge Road South
New Southgate, London N11 1HB

Dear Mr. Jackson:

I am enclosing two copies of the IS/1 Text Processing Manual as you requested. Of particular interest to the beginner is the section on INed, the INTERACTIVE text editor. You will also find several articles on the various INroff programs you have expressed an interest in, including those for use with a phototypesetter.

Please let me know if you have questions on any of the information in this manual. I look forward to hearing from you.

Sincerely,

M. Gillogly
Publications Coordinator

Figure 4.

INword — continued

- indents, permanent and temporary
- underlining
- conditional insertion and deletion of text
- automatically numbered and positioned footnotes
- automatically numbered headings
- even-odd page differentiation capabilities
- centering
- specification of multi-line headers
- specification of multi-line footers
- keeping a block of text or a table on a single page
- specification of page length (if default length not desired)
- specification of left and right margins (if default margins not desired)
- forcing the beginning of a new page
- extension of a particular page by a few lines
- single or double spacing
- specification of top and/or bottom margins including multi-line headers and footers (if default header or footer not desired)

Finding Errors and Making Corrections

The user can see how an input document will format and paginate before typing the file on a printer by typing the command *proof filename*. The system will create a completely formatted version of the file under the name "proof." This proof file will show you exactly what the file will look like when it is run off on a printer, including all headers, footers, page numbering, hyphenation and page breaks.

The original file can be accessed while viewing the proof file as either an alternate file or a second window on the screen. Using the search capabilities of the system, the user can scroll through the proof file, and, when the need for a typing or formatting correction is noted, move into the original file at the exact location where editing is required.

Utilities are provided to aid with the proofreading:

- dict: identifies possible typographical and spelling errors by comparing all the words in the copy with those stored in our dictionary. You may add words to the dictionary.
- diff: lists the differences between two files. This will explicitly point out all of the changes made.

- comm: finds the lines in common between two files. This will aid in pointing out repetitive information.
- grep: searches through a file or files for a particular string. This will help you locate those sections that need revision.

Training

INTERACTIVE has designed a special INword training manual offering programmed instruction. A novice can create, edit and type any document (from a letter to a lengthy proposal with charts and footnotes) after two or three days of training. One week of on-site training is included with INword.

INroff Formatting Package

INroff consists of a number of programs that provide sophisticated formatting capabilities. Complex tables, mathematical equations and multicolumn documents can be produced on high quality output devices including phototypesetters. Figure 5 is an example of output obtained from INroff and Figures 6 and 7 illustrate the simple nature of the input required to get such output. INroff codes are embedded in the text and consist mainly of simple one and two letter instructions.

Initial Input

Input to INroff comes from the same sources as INword: video terminal, typewriter-like terminal, magnetic tape, or communications link with another central processor.

Text Processing Features

- all of the features available with INword
- accents and diacritical marks
- lists
- tables
- mathematics, formulas, equations
- automatically numbered figure and table captions
- automatic table of contents
- italics (underlining on a printer)
- various fonts, as allowed by the output device
- multi-column capability

You can control, or use the built-in defaults, for:

- point size
- vertical spacing
- title length
- paragraph spacing
- paragraph indenting
- footnote length
- column width
- intercolumn gap

Cost Effective

If your organization requires ten or more stations, INTERACTIVE Systems can provide you with some of the most sophisticated word processing tools available at a price per station comparable to that of word processing systems without data processing capabilities. As you add more stations, the cost per station will continue to decline.

If you spend a great deal of time in the creation and revision of letters and documents, INTERACTIVE can increase your productivity and supply the necessary tools for high quality printed output.

- page offset
- page length
- top margin
- bottom margin

Macro Facility

For any frequently used sequence of formatting commands, you can create an INroff macro. To invoke the entire command sequence, you merely enter the macro name where you want it executed. Changes in the overall format of a document can then be easily effected by changing macros. Thus, when you decide that paragraph indents for a 6,000 paragraph document should be 3 spaces instead of 5, you need only change the one line that defines this quantity in the paragraph macro.

Scientific and Technical Composition

A preprocessor is provided that will allow you to typeset mathematical equations and complex formulas. A special character dictionary is called upon to typeset the scientific symbols.

Finding Errors and Making Corrections

An approximation of the final copy can be proofread before final printing. Any spelling correction, copy revisions, or design modifications can be made using INed, our word processing editor, or ed, a line-oriented editor for use with hardcopy terminals. Although the video display terminal or hardcopy terminal may not produce an exact copy of the material as it will appear, you will be able to sufficiently preview the text to minimize errors.

Proofreading utilities described under INword are also available for use with INroff.

continued on page 10

SUMMARY OF INED FUNCTION KEYS

KEY	Action of KEY	Action of ENTER KEY	Action of ENTER X KEY (X is any argument) (Note 2)	Action of ENTER pos'n KEY (pos'n is cursor-defined arg.)
+PAGE -PAGE	Moves window forward (+) or backward (-) one windowful.	Begins definition of cursor-defined argument.	X is numeric. Moves window forward or backward X windowful.	Continues defining argument.
+LINE -LINE	Moves window forward (+) or backward (-) part of a windowful.	Moves window so CCL (Note 1) is the first line in window (+) or last line in window (-).	X is numeric. Moves window forward (+) or backward (-) X lines.	Continues defining argument.
OPEN	Inserts a blank line at CCL (Note 1).	Moves the part of CCL starting with cursor position to a new next line.	X is positive. Inserts X blank lines above CCL.	Inserts blank lines or rectangle in area defined by cursor.
CLOSE	Deletes CCL and places it in CLOSE buffer.	Deletes the part of CCL starting with cursor position, replacing it with the line below CCL.	X is positive. Deletes X lines starting with CCL and puts them in CLOSE buffer.	Deletes lines or rectangle defined by cursor and puts it in CLOSE buffer.
RESTOR (Note 5)	Places contents of CLOSE buffer at cursor position (Note 4).	Places contents of CLOSE buffer at cursor position (Note 4).	X is positive. Places X copies of contents of CLOSE buffer at cursor position (Note 4).	ERROR (Note 3)
PICK	Places CCL in PICK buffer.	ERROR (Note 3)	X is positive. Places X lines starting with CCL in PICK buffer.	Places lines or rectangle defined by cursor in PICK buffer.
PUT	Places contents of PICK buffer at cursor position (Note 4).	Places contents of CLOSE buffer at cursor position (Note 4).	X is positive. Places X copies of contents of PICK buffer at cursor position (Note 4).	ERROR
EXIT	Exits editor. All altered files are written to disk, old versions are renamed name.bak.	Exits editor, saving files as in EXIT case, then executes most recent ex , load or compil <i>/S/I</i> command.	If X is the letter a , exits without writing any files; all editing is lost and files are unchanged.	Exits editor, saving files as in EXIT case, then executes most recent ex , load or compil <i>/S/I</i> command.
+SRCH -SRCH	Searches forward (+) or backward (-) for the last string searched for (if any).	Searches forward (+) or backward (-) for the string pointed to by the cursor up to the first blank.	Searches forward (+) or backward (-) for the string X.	ERROR
GOTO	Moves window so line 1 of file is top line.	Moves window so last line is part way down the window.	X is numeric. Moves window so line X of file is part way down the window.	ERROR
USE	Switches window to alternate file; current file becomes alternate file.	Edits file taking name from cursor position up to next blank, old current file becomes alternate file.	Edits file with name X as current file; old current file becomes alternate file.	ERROR
SAVE	Writes current file out on disk.	Writes current file out on disk with file name taken from cursor position up to next blank.	Writes current file out on file named X.	ERROR
WIN	Makes a new window with border extending from cursor position (which must be next to a border).	Deletes last window created.	Makes a new window as in WIN case and edits file X in it.	ERROR
CHWIN	Switches current window to be next window.	ERROR	X is numeric. Switches current window to be Xth created window.	ERROR
SR TAB	Sets a tab stop at cursor column.	Removes any tab stop at cursor column.	Removes any tab stop at cursor column (X is ignored).	Removes any tab stop at original cursor column (argument is ignored).
DO	Runs last DO command exactly as it was given.	ERROR	X is a command in the format [n][l] prg [arg...] (in <i>/S/I</i> shell notation). Replaces n paragraphs (or n lines if l appears) by result of running filter prg on that text with given args. Old paragraphs are placed in the CLOSE buffer.	ERROR
LEFT	Moves window left 16 columns or to file boundary, whichever is less.	ERROR	X is numeric. Moves window left X columns or to file boundary, whichever is less.	ERROR
RIGHT	Moves window right 16 columns.	ERROR	X is numeric. Moves window right X columns.	ERROR
REFRSH (Note 5)	Redraws terminal display.	ERROR	ERROR	ERROR

1. CCL is the Current Cursor Line.
2. "X is numeric" means the argument must be an integer. "X is positive" means the argument must be a non-negative integer. If one of these restrictions applies, and an argument violates it, an error message will be given.
3. "ERROR" means an error message will be given if this function sequence is typed to the editor.
4. If buffer contains full lines, CCL and following lines are pushed down to make room for inserted lines. If buffer contains a rectangular area, its contents are inserted with the cursor position at the upper left corner of the rectangle, and partial lines to the right of the inserted material are pushed to the right.
5. This function key does not appear on all terminals.

Figure 5. INroff output onto phototypesetter produced the above table

Equations

A straightforward syntax allows easy equation input. For example, the following equation

$$J_0(z) = \frac{1}{\pi} \int_0^\pi \cos(z \sin \theta) d\theta$$

was produced using the following set of commands:

```
.EQ C      (C for centered equation)
J sub 0 (z) = 1 over pi int sub 0 sup pi cos ( z sin theta ) d theta
.EN      (end of equation)
```

this equation:

$$Pr\{\vec{i}_D\} = \sum_{m=2,4,\dots,[D]_e} (i_m-1) N^{D-m} \int_0^1 \prod_{k=0}^{D-1} T^{P_k(m)}(u,k) du \quad (5.6)$$

was produced from

```
.EQ (5.6)
Pr "{ i vec sub D }" ~ =
sum from {m=2,4,..., left floor D right floor sub e}
(i sub m -1) N sup D-m
int sub 0 sup 1 ~
prod from k=0 to D-1 T sup {P sub k (m)} (u,k)~du
.EN
```

Figure 6. INroff examples

INroff — continued

INroff provides the ability to reprocess and retype portions of the document by page number. In most cases, you will NOT have to reprint an entire document because a change has been made.

Revision bars may be generated with the help of *diffmark*. After updating your document, you can create a version for printing with vertical bars showing the changes made. In addition, INTERACTIVE has available a utility system, SCCS, that will keep an audit trail of all changes made to the document. SCCS records who, when, what, and why the changes were made. Using this system you always have the ability to recall a previous version of the document without having to maintain a backup of each version.

Output Devices

INroff insulates the text processing system from specific output devices. This permits INTERACTIVE to develop post-processors for new high quality output devices as they become available.

Tables

It is also possible to produce simple tables without much effort.

Mediterranean Fruit Flies	
Year	Number intercepted
1965	45
1966	218
1967	2420
1968	9070
1969	4218
1970	20300

can be produced by using either of the following input files:

<pre>.TS allbox, tab (!); c s c c n n. Mediterranean Fruit Flies Year Number intercepted 1965 45 1966 218 1967 2420 1968 9070 1969 4218 1970 20300 .TE</pre>	or	<pre>.TS allbox, tab(!,10); c s c c n n. Mediterranean Fruit Flies Years Number intercepted 1965 45 1966 218 1967 2420 1968 9070 1969 4218 1970 20300 .TE</pre>
--	----	---

Figure 7. INroff examples

INfort

INfort is a Fortran 77 compiler currently running under IS/1 and IS/1 Workbench. It is a subset of the Fortran 77 (BSR x3.9-1977) proposed standard, implementing the entire Fortran 77 specifications with the exception of the ENTRY statement.

The INTERACTIVE Fortran compiler maximizes system performance by using the same code generation routines and optimization routines written for the C language. Using this strategy, flexibility is achieved by enabling Fortran programs to communicate freely with C programs and vice versa. In addition, compile time diagnostics are complete and easy to comprehend.

Interactive Extensions

INfort is capable of communicating dynamically with your terminal by means of the **accept** and **print** commands. It is also possible to debug INfort programs using our interactive debugging tools.

INremote File Transfer and Remote Job Entry

If you have text files on another computer that you would like to have access to from IS/1, or if you have created text files using the facilities of IS/1, these files can be transferred using INremote.

To perform remote job entry, just create a job file, using the control language of the other processor and SEND it to the other computer.

When your job is received by the target computer, you will receive an acknowledgement. You may query to determine your position in the transmission queue to the target system. If you change your mind, you can cancel your job. You will be notified by the system when your job has been completed and the output has arrived.

What Do You SEND?

- ordinary files, created in the editor
- standard input from the terminal
- output of a user program
- output of a Shell command or any combination of the above.

The **SEND** command file extends the host job control language facilities. Rather than placing fixed parameters in the host command file, you place keywords. One keyword could be used to specify a particular parameter

Our Fortran 77 language includes the following:

- Data Types
 - INTEGER or INTEGER*4
 - INTEGER*2
 - INTEGER*1
 - REAL or REAL*4
 - DOUBLE PRECISION or REAL*8
 - COMPLEX or COMPLEX*8
 - LOGICAL or LOGICAL*4
 - LOGICAL*2
 - LOGICAL*1 or BYTE
 - LOGICAL*0
- Statement Types
 - ACCEPT
 - Arithmetic Statement Function
 - Assigned GO TO
 - ASSIGN
 - BLOCK DATA
 - CALL
 - CLOSE
 - COMMON
 - CONTINUE
 - DATA
 - DIMENSION
 - DECODE
 - DEFINE FILE
 - DO
 - END
 - ENCODE
 - END FILE
 - EQUIVALENCE
 - EXTERNAL
 - FORMAT
 - FUNCTION
 - GO TO
 - Assigned GO TO
 - Computed GO TO
 - Logical IF
 - Arithmetic IF
 - IMPLICIT
 - INTRINSIC
 - OPEN
 - PARAMETER
 - PAUSE
 - PRINT
 - PROGRAM
 - READ
 - RETURN
 - REWIND
 - SAVE
 - STOP
 - SUBROUTINE
 - TYPE
 - WRITE

anywhere in the job control language statements and source text. SEND will automatically prompt you for a value corresponding to each parameter.

You can build a modular control system for your job, avoid duplication and ease maintenance by using nested command files.

Automated Control

Your system will create a temporary file, gathering input from your nested command files. This file is then queued for transmission to the target computer.

Hosts

Your INTERACTIVE system can submit jobs to the IBM 370, using HASP Multi-leaving or JES/2; the Burroughs 7700, using DC1100 protocol; and the UNIVAC 1108, using the NTR protocol. Also available is 3780 communications support. Other hosts are under consideration for remote job entry communication development.

NOTE: This document was created using the INTERACTIVE System/One Workbench, including INed and INroff, and was produced using the INtext terminal and a Wang phototypesetter.

X.25

X.25 is the standard international protocol for interfacing to a packet-switched network. Our X.25 software makes it less costly to use commercially available public data networks, by functionally replacing expensive hardware. This package might tip the balance between costs and benefits of network membership in the right direction for many IS/1 or IS/1 Workbench installations.

Additional information available

Additional information on any of the products described may be obtained by writing to INTERACTIVE at the sales offices listed below. Or call us to arrange for a demonstration of the system. We look forward to hearing from you soon.

INTERACTIVE Systems Corporation
1212 Seventh Street
Santa Monica, California 90401
213/450-8363

1015 Fifteenth Street, N.W., Suite 907
Washington, D.C. 20005
202/789-1155

INTERACTIVE SYSTEMS CORPORATION

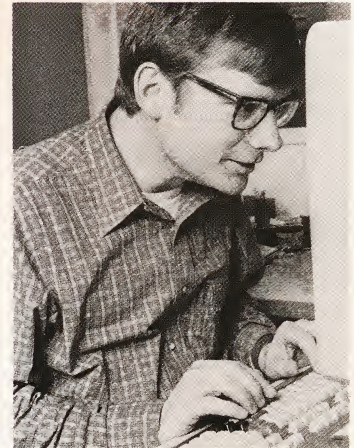
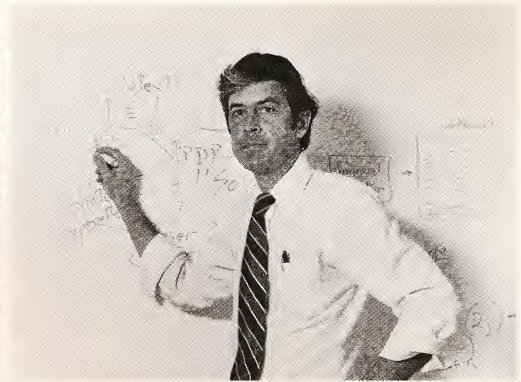
laser & ink jet printing • **photo**composition
international communication
x.25 international protocol
electronic mail • group conferencing

INTERACTIVE
SYSTEMS CORPORATION

Office Automation
built from
UNIX

laser & ink jet printing • **data processing**
international communication • group conferencing
full screen editing • **photo**composition
x.25 international protocol • electronic mail
word & text processing

*Unix is a trademark of Bell Laboratories



OFFICE AUTOMATION: **THE INTERACTIVE APPROACH**

The integration of many technologies

True office automation is the integration of many electronic disciplines into a people-oriented working environment. Not only is the written word produced using advanced word processing technology, but it is then distributed, stored, retrieved and manipulated using the best in sophisticated filing and network technology.

At INTERACTIVE we have combined human engineering and integrated technology into a system that provides the most advanced office automation technology today with full capabilities to expand into the technology of tomorrow. It is a system designed for continual change and growth...for now and for the future.

The INTERACTIVE system spans the disciplines to provide a fully integrated automated office. Using the most advanced text processing techniques, your documents can be produced and received instantly, whether across the hall or across the world.

To meet your varied needs, our wide range of data processing capabilities is fully integrated with our word processing software. From a single terminal you can access extensive facilities for electronic filing and retrieval, word processing, electronic mail, communication networks and data processing.

One step at a time

No office can automate immediately and totally. It is too much of an upheaval for the office environment. This is why INTERACTIVE has taken a modular approach to permit you to automate at your own pace based on your own company needs.

If your immediate needs are in the word processing area, we can provide you with powerful and

flexible editing capabilities and an array of printing options. If your needs are in the electronic mail and network market, we offer advanced communication features.

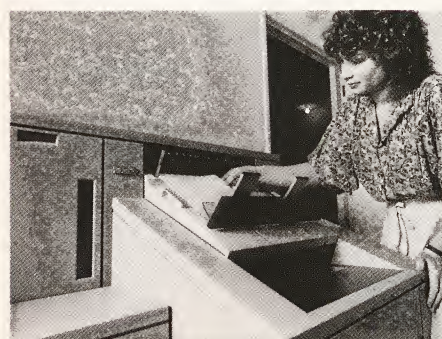
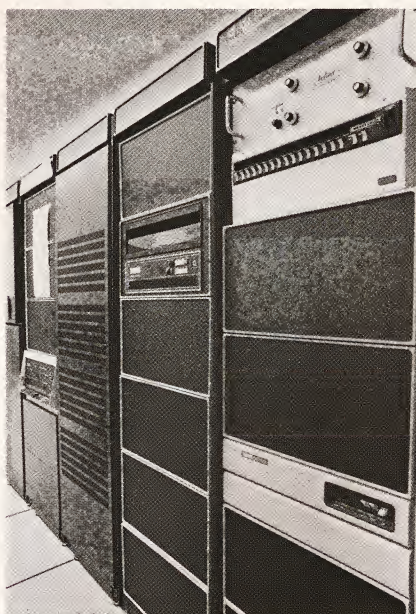
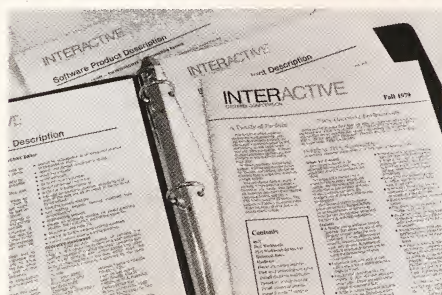
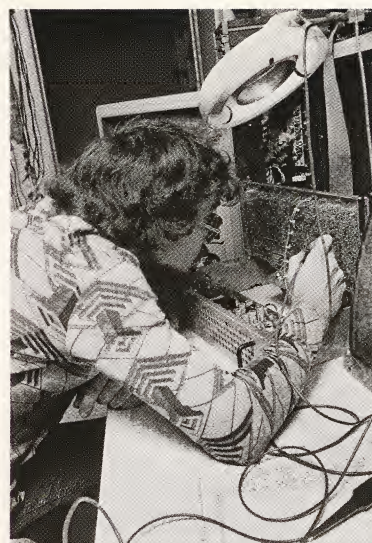
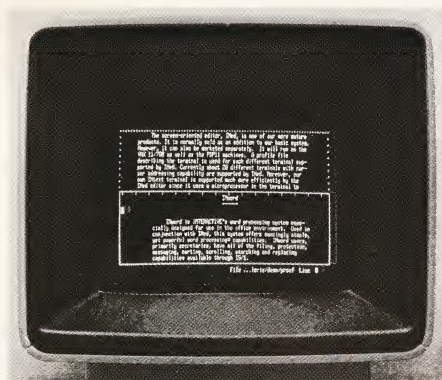
What is most important, however, is that no matter where you want to begin your office automation program, you can grow with INTERACTIVE, step by step, merely by adding additional hardware and software as you need it. This ability to expand your system and enhance its features over time helps protect and increase the value of your investment today.

Tailored to your needs

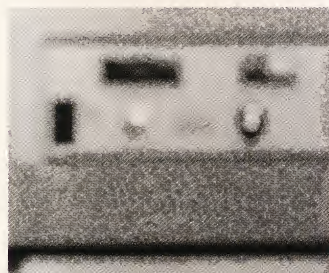
INTERACTIVE understands that your company is unique. So our system offers programming tools to permit you, the user, to develop fully integrated individualized applications programs. You need not compromise your uniqueness to suit the system; with INTERACTIVE you can create a system tailored to your company's individual needs.

Keeping pace with technology

In addition to adding new capabilities to your system as the need arises, INTERACTIVE's powerful UNIX-based system permits continual state-of-the-art enhancements as new technology emerges. This means that the system you buy today will be updated and enhanced on a continual basis for tomorrow.

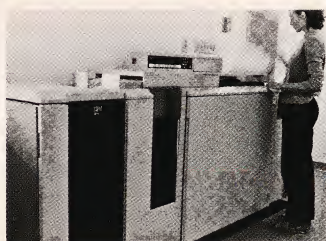
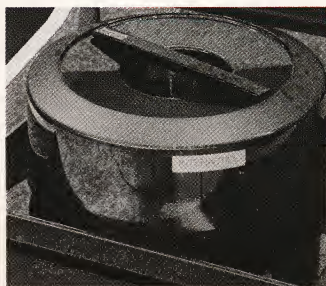


OFFICE AUTOMATION BUILT FROM UNIX



...of libraries full of dump tapes and not be out of skew for the last four months. If the dump tapes regularly to be sure they are, attempt to read the tape on a different

...es in some cyclic fashion. This is not all the dump tapes. Sometimes it is not important to keep around very old tapes, three cycles of dump tapes. Daily tapes are Friday tapes. They are recycled on Friday tapes for the last four Fridays. The last monthly tape is for a quarter. The last monthly tape is



The system basis

INTERACTIVE offers a shared logic system based on DEC PDP-11* or VAX* minicomputers and our enhanced version of the UNIX operating system. Each work station, equipped with INTERACTIVE's INtext terminal, can access the complete range of facilities available. This full screen terminal was especially designed to offload much of the processing from the central CPU.

The use of minicomputer systems such as these provide the functionality of a larger system with the flexibility to begin your office automation on a small scale. Depending on usage, up to 30 active terminals can be connected to a single system, giving a very low and competitive cost per station. As your needs demand, additional terminals and CPU's can be added to your system.

Since all terminals have access to all system facilities, your staff has complete flexibility. Secretaries can create, edit and print their documents; they can also perform a myriad of administrative functions offered by the system. Administrative personnel are not limited to the data processing and administrative capabilities of the system; they can access, review and retrieve the secretarial work product. Electronic messages can be sent and received by all personnel, providing an electronic company bulletin board.

The UNIX operating system, developed at Bell Laboratories, forms the basis of our software systems. Essentially all system code is written in a high-level language (C). UNIX is renowned for supporting and encouraging the development of modular, flexible software. We started with UNIX, but over 10 man-years of development effort by our staff has created a superior system tailored to the office environment.

*DEC, PDP and VAX are Registered Trademarks of Digital Equipment Corporation.

THE INTERACTIVE SYSTEM: A PRODUCT OVERVIEW

Hierarchical filing and protection

The hierarchical filing structure permits you to store documents using the simple and logical file drawer concept. Full reading and writing protections are available on any file for the originator, a group designated by the originator and other system users. Particularly sensitive material can be encrypted.

Editing

All stations can take advantage of INTERACTIVE's two-dimensional CRT based text editor, INed. INed offers full "cut and paste" capabilities, string search and multiple file windows. Simple function buttons permit you to merge, move and duplicate text within a single file or document or among a number of files and documents. In addition, while editing, outside data processing functions can be invoked.

Word processing

Secretarial stations will depend heavily on INTERACTIVE's word processing software, INword. Using INword, a secretary can learn within a few days to create any type of document, from a simple letter to a complicated report. Features of the INword system include justification, hyphenation, headers and footers, automatic footnoting, flexible page size, margins and numbering, centering, underscoring, page proofing and automatic section numbering.

Helpful system software can be fully utilized by your word processing personnel. Such software includes the ability to check for typographical errors, compare two files, sort columns of data and merge variable text into master documents.

Printing

Work produced on the system can be output on a number of different peripheral devices. Included are correspondence quality printers, ink jet and laser printers, line printers and phototypesetters.

Intracompany communication

The electronic message system, INmail, facilitates the immediate distribution of messages within the company. Using Telenet, Tymnet, or dial-up telephone lines, intracompany messages are immediately delivered to remote sites within the country or throughout the world. INmail provides for sending, receiving, filing, retrieving, answering, forwarding and deleting of messages to and from any single user or group of users on your system.

Using networks or telephone lines, any documents or files can be reviewed, sent, or even printed at any remote location.

Intercompany communication

INTERACTIVE's system can also be used in conjunction with the TELEX/TWX international network. You can originate TWX messages at your terminal, and send, route, file and receive them just like electronic mail.

Our system supports the X.25 transmission protocol. This standard international protocol for packet switched networks makes it less costly to interface with commercially available public data networks.

Administrative support

In addition to using the above facilities, the system offers a wide range of programs to support administrative personnel. These range from

automating your phone book and calendar to having the system remind you about important dates and meetings.

Group conferencing

Our electronic conferencing software, CONFER, allows you to set up a conference between a number of logged-in users on the system and allow other (invited) users to join the conference as well. All communication between users is displayed in an interactive fashion at each user's terminal. And, at the end of the conference, each user is given the option of saving a transcript of the conversation.

Specialized software development

The system provides you with the ability to create and use your own specialized software. The system's flexibility permits the layman to write simple applications or your systems people to use our software development tools for major in-house programming projects. Using these facilities, you can create a tailor-made automated office.

Full support and maintenance

Our systems are available with complete installation, training, maintenance and customer support. As we develop and enhance our software, we pass these improvements on to you. Thus you are assured of always having an up-to-date, state-of-the-art system.

PLANNING YOUR FUTURE TODAY

We sincerely invite you to learn more about how INTERACTIVE can provide the basis for your automated office. INTERACTIVE is committed to providing state-of-the-art technology in all of the office automation disciplines. And, as newer technologies emerge, INTERACTIVE is committed to exploring, developing and incorporating them into the products and services of tomorrow.

This commitment is confirmed by the ever increasing number of INTERACTIVE customers. Included among our customers are:

Albert Einstein College of Medicine
Bell Northern Research, Inc.
Bell Telephone Manufacturing Company
California Institute of Technology
Chemical Abstracts Service
Colorado State University
Davis Polk & Wardwell
General Electric Company
ITT
Operating Systems, Inc.
Pattern Analysis and Recognition Corporation
Quotron Systems, Inc.
Siemens Corporation
Wells Fargo Bank

If you would like more detailed information or to arrange for a personal demonstration, please write or call our office nearest you.

INTERACTIVE Systems Corporation
1212 Seventh Street
Santa Monica, CA 90401
213/450-8363

1015 Fifteenth Street, NW, Suite 907
Washington, D.C. 20005
202/789-1155